MEDUSA

WATERPROOFING

PATENTED

SANDUSKY PORTLAND CEMENT COMPANY

SANDUSKY, OHIO, U.S.A.

WARNING!

All materials for waterproofing concrete or mortar, in powder or paste form, consisting essentially of fatty acids combined with calcareous bases, unless manufactured under our license, are INFRINGEMENTS OF OUR BASIC PATENTS listed on next page. All such infringements will be *vigorously prosecuted.* Suits against several manufacturers are now in preparation.

Medusa Concrete Waterproofing Co.

Medusa Waterproofing Patent Sustained

In the United States District Court, Northern District of Illinois, on February 13, 1914, a decree was entered declaring the Newberry Patent, No. 851,247, to be good and valid, and that the McCORMICK WATERPROOF PORTLAND CEMENT COMPANY and S. T. SJOBERG infringed said patent and are perpetually enjoined from making or selling waterproof cement or carrying on the process described in said patent, and that the complainant shall recover the damages resulting from said infringement.

Medusa Waterproofing

Makes concrete impervious to water--Prevents discoloration and efflorescence

A dry powder, to be thoroughly mixed dry with dry cement before the sand and water are added, thus becoming an inseparable part of the concrete

Medusa Waterproofing gives absolutely permanent results. Does not affect strength, setting or color of Portland cement

MANUFACTURED FOR

The Medusa Concrete Waterproofing Company

Assignees of Patents, by

The Sandusky Portland Cement Company

Sandusky, Ohio, U. S. A.

UNDER U. S. PATENTS TO

Liebold, No. 771,080, September 27, 1904
Liebold, Re-issue, No. 12,470, April 3, 1906
Liebold, No. 847,015, March 12, 1907
Newberry, No. 851,247, April 23, 1907
Barrett, No. 898,547, September 15, 1908

Medusa Waterproofing

MEDUSA Waterproofing is a dry white powder and consists of fatty acids, chemically combined with lime. Owing to its extreme fineness it may easily be perfectly mixed with cement in the necessary proportions.

Medusa has now been on the market several years, is the original *concrete* Waterproofing, patented in 1907, and has been used in every part of the world under every condition and in every character of construction in which Portland cement is used. The dry powder system of waterproofing is far superior to the use of any of the so-called waterproof compounds in liquid or paste form, as these are generally difficult to mix with water, and many of them are practically worthless as waterproofing substances.

As is usual in such cases, the extraordinary success of the Medusa Waterproofing has led to a host of imitations and infringements. Medusa is of standard composition, containing 25% of combined fatty acids, while other materials on the market of pretended value contain only 6 to 8%, and therefore must be used in three or four times the quantity of our material to produce the same result. There are also some compounds on the market which contain no waterproofing substance whatever, and are, of course, absolute frauds. Permanent and thorough waterproofing effect can be secured only by the chemical combination of fatty acids with alkaline earth bases, and this principle is fully covered by our patents.

Consumers are, of course, unable to determine the composition of the materials furnished for waterproofing, and substances containing only a very small percentage of actual waterproofing may give apparently good results at the start, but experiments have shown that for permanent results a material of the composition of Medusa Waterproofing is necessary.

A trial will convince cement users that Medusa Waterproofing, in dry powdered form, is the only true preventive of dampness in concrete. The everlasting quality of its waterproofing effects is due to its being absolutely insoluble and unaffected by water even after years of contact. Permanent water-resisting qualities are obtained with less than one-fourth as much Medusa Waterproofing as is required of other so-called waterproof compounds to produce an apparent and temporary effect. Medusa is specified by the most eminent architects and engineers in the United States and Europe, and is rapidly displacing the old-time paints and coatings formerly used to prevent the penetration of water into concrete.

Medusa Waterproofing

Method of Use

TO RENDER cement work impervious to water, a small quantity of the Waterproofing is *thoroughly mixed* with the dry cement before the addition of sand and water. For most purposes from one to two per cent. of the weight of cement used will be found sufficient. This is equivalent to from *four to eight pounds of Waterproofing to one barrel of cement.* The precise amount to be used must be left to the experience of the user, and depends upon the proportion of sand, etc., employed, and on the kind of work to be done.

Thorough mixing is of the utmost importance.

Medusa Waterproofing is not soluble, therefore after mixing it dry with dry cement, add sand and mix all thoroughly; then add water slowly until desired consistency is secured. This will prevent the Waterproofing being washed out of the mixture.

Advantages

It is well known that comparatively poor mixtures of cement, sand and gravel or stone are *abundantly strong* for most purposes. The drawback to these poor mixtures is their porosity, which causes them to absorb water like a sponge. So-called water-tight mortar may be made by using a large proportion of cement or cement and lime, at great cost. *We have found that cement with one per cent. of Medusa Waterproofing, with five parts sand, gives a more impervious mortar than ordinary untreated cement with two parts sand.*

Medusa Waterproofing does not affect the color, strength, setting or hardening qualities of concrete and when used in proper proportions it will make any concrete work impervious to water and prevent discoloration from rain.

Medusa Waterproofing prevents the white *efflorescence* which so ofter renders cement work unsightly; also prevents the appearance of *hair-cracks* on the surface.

Medusa Waterproofing will be found to be especially suitable for building blocks, cement plastering, roofing tile, cellar walls, cistern and reservoir linings, conduits, sewer pipe, elevator pits, and in a multitude of other uses in which resistance to percolation of water is required.

Use in Concrete Blocks

Use 1 per cent. mixture; this means 1 lb. Waterproofing to each sack of cement or 4 lbs. to a barrel. Mix thoroughly while dry. Blocks containing this percentage will be found sufficiently waterproof to admit of plastering directly on the walls without furring or lathing. The same mixture will prevent the appearance of efflorescence and discoloration after heavy rain storms.

Its use in facing mixture is all that is necessary to obtain satisfactory results.

Cement blocks should be laid up in mortar containing the Waterproofing.

There is no extra expense incurred when Waterproofing is used in concrete block making, as customers will find that the use of Medusa will enable them to considerably increase the proportion of sand used and that the saving in cement thus effected will fully cover the cost of the Waterproofing. You must consider that plain blocks cannot be made waterproof even at a mixture of 1 part cement, 2 parts sand, while with 1 per cent. Medusa Waterproofing added to cement a 1 to 5 mixture used in making concrete blocks will prove waterproof.

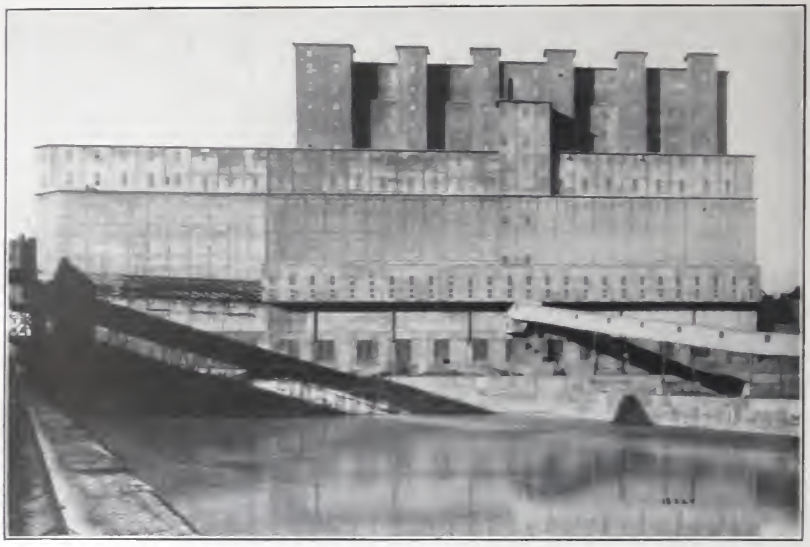
Use in Mortar, Plaster and Stucco

Use 1½ to 2 per cent. mixture; this means 1½ to 2 lbs. Waterproofing to each sack of cement or 6 to 8 lbs. to a barrel. Mix thoroughly while dry. This percentage in a mix of 1 part cement and 2 parts sand is recommended for stucco work as well as plaster for waterproofing cellars, reservoirs, water-tanks, cisterns, foundations, etc. For cement floors and roofs it is only necessary to use a 2 per cent. mixture in top or finishing coat.

Use as a Wash

Use 1½ per cent. mixture; this means 1½ lbs. Waterproofing to each sack of cement, or 6 pounds to a barrel. Mix thoroughly while dry. Put a portion of the mixture in a pail, add water slowly and sufficient to make a paint of the consistency of cream. Keep agitated with a stick while in use. The surface must be thoroughly wetted, and the wash applied evenly with a brush. The coating must be THIN, or hair-cracks are likely to develop. This mixture will give a waterproof surface.

On receipt of fifty cents we will express, charges paid, a three-pound sample



Harbor Commissioners' Grain Elevator No. 2, Montreal, Quebec

This is the largest reinforced concrete grain elevator in the world, and brings the handling and storage capacity of the harbor in excess of any other North American ocean port. The entire structure, including first story bins and the cupola above the bins, is of concrete. Even in the cupola, columns, beams, floors and roof are of this material, making it absolutely fireproof, and 30,000 lbs. Medusa Waterproofing were used to make the work impervious to water and dampness. John S. Metcalf Co., were the construction engineers.

The elevator, including storage addition, is 456 feet 8 inches long by 100 feet wide, and 220 feet 9 inches high to the top of the leg towers, and has a total capacity of 2,622,000 bushels. Four railroad tracks extend through the entire elevator, the shipping conveyor galleries are 1½ miles long, and ordinarily the elevator will receive 240 cars in 10 hours. The concrete bins are 86 feet deep and bin walls are in general 8 in. thick, while the bin capacities range from 6,800 bushels to 14,300 bushels and the total number of bins is 278, exclusive of shipping bins. The total shipping capacity, starting with the shipping bins full, will be 90,000 bushels hourly for 10 hours.

In the construction of this elevator 48,000 cubic yards of concrete and 5,100 tons of steel were used. The machinery will be run by electricity, for which 64 motors have been installed, totaling 4,000 horse power, and 13 telephones will be used in elevator and conveyor galleries.

A marine tower for unloading boats was also constructed, the maximum hourly capacity of which is 40,000 bushels, and a reinforced concrete building was provided for a grain dryer with a capacity of 5,000 bushels per day.

Reinforced Concrete Reservoir, Waltham, Massachusetts.

Bertram Brewer, City Engineer, Waltham,
Engineer in charge of construction;
J. R. Worcester and
Sanford E. Thompson,
Consulting Engineers;
Simpson Brothers,
Corporation Contractors.

This illustration is of the Waltham, Mass., Reservoir, which has a capacity of 2,000,000 gallons is a wonderful example of reinforced construction and was made waterproof with MEDUSA WATERPROOFING.

Extract from Report on Tests of Strength and Impermeability of Treated Concrete

By S. B. Balland, Polytechnic Institute, Brooklyn, N. Y.
Published in Cement Era, Dec. 1909

The first experiment was made to obtain an approximate idea of the realtive degree of permeability of treated and untreated briquettes. Three briquettes were selected which, for comparison, will be called No. 1, No. 2 and No. 3, respectively. No. 1 contained no compound, No. 2 was treated with 1 per cent., by weight, of Medusa Waterproofing, and No. 3 with 2 per cent. of the same compound. The water was turned on and maintained under a constant pressure of 40 pounds. After five minutes had elapsed, briquette No. 1 showed slight evidence of percolation. After twenty-five minutes more, a damp spot appeared on the bottom of briquette No. 2. In the meantime, 15 grams of water had percolated through briquette No. 1, while briquette No. 3 was perfectly dry. The test was continued for two hours, and at the end of that time, 65 grams were collected under briquette No. 1, the water percolating freely not only through the bottom, but also sides and top of briquette; the damp spot on briquette No. 2 spread so as to cover the whole bottom of briquette, while briquette No. 3 remained absolutely dry.

From an examination of the above the following conclusions can be drawn:

1. The incorporation of a chemical compound with cement before mixing reduces the permeability of concrete to a marked degree.
2. An increase in the percentage of compound will further decrease permeability.

Inland Steel Company Tunnel, Indiana Harbor, Indiana

The Inland Steel Company of Indiana Harbor, Indiana, recently constructed a switching tunnel, 2214 feet long, connecting Plants No. 1 and No. 2.

The approaches to the main tunnel on either end are each 807 feet long and an average width of 30 feet, while the portion of the tunnel under cover is 600 feet long with an average width of 31½ feet and height of 23 feet.

The main tunnel under cover is divided by a curtain wall which separates two standard guage tracks also a three foot sidewalk extending throughout the tunnel. The floor is of concrete two feet thick and standard guage creosoted oak ties were imbedded four inches in the concrete.

The walls of approaches are two feet thick at the top and five feet at the bottom while inside the covered portion of the tunnel they are six feet thick at the top and twelve feet at the bottom.

The Inland Steel Company's plants are situated on the south shore of Lake Michigan and the tunnel in question is located about one-eighth of a mile from the water front. It carries an average of a 12 foot water-head and in some places as high as 16 feet, yet this tunnel has been made absolutely waterproof by a simple, effective and economical process which is meeting with approval and endorsement of prominent architects, engineers and contractors.

Only 1500 barrels of Medusa Waterproofed Cement were required to secure the desired result in this work. It was used in proportion of one part Medusa Waterproofed Cement to two parts of sand, in a mortar coat ½ inch thick in the floors and in the finish coat on the face side of the walls, also in connecting steel girders on the top of covered section.

The Brownell Improvement Co., 133 W. Washington Street, Chicago, Ill., were the contractors and A. H. Bannister, the General Superintendent.

Fort Garry Hotel, Winnipeg, Manitoba, Canada.

Occupying the site of the old historical fort belonging to the Hudson's Bay Company, the "Fort Garry," the new $2,500,000 Grand Trunk Pacific hotel, Winnipeg, Manitoba, is not only one of the most magnificent and imposing hotels in America, but it also embodies all the essentials of a modern, up-to-date home.

It is of French architecture, fourteen stories high, absolutely fireproof, the steel work non-expansive, partitions of terra cotta, floors of marble, tile or cement, and stairways of metal. Indiana buff limestone extends from the base of Canadian gray granite to the copper roofing.

The Fort Garry was erected and completed under the direction of the architects, Ross & Macdonald, and the general contractor was the Geo. A. Fuller Co. 30,000 pounds of Medusa Waterproofing were used in its construction to make it damp-proof.

Medusa Waterproofing

Used with Wonderful Results Under Heavy Water Pressure

Sinking and Lining with Concrete a 6-foot Well 80 Feet Deep in Water-bearing Soil

THE excavation for a well 6 ft. in diameter and 80 ft. deep, for a shot tower built for the Equitable Powder Manufacturing Co., of East Alton, Ill., was recently made in sand, gravel and clay which carried large quantities of water, and a perfectly water-tight concrete lining provided for it under particularly difficult conditions. The works of the Powder Company are two miles from the Mississippi River, but owing to the many and varied strata of sand and clay encountered in the excavation, it is considered that the course of the river was at one time over the site. A test hole put down at the latter to a depth of 40 ft. with a 2 in. pipe determined that about 10 ft. below the surface was a stratum of sand, 6 to 8 feet thick, which changed gradually into coarse sand and gravel containing a large amount of water. Under this sand and gravel was a bed of blue clay followed in order by strata of fire clay, quick-sand and then clay again.

A well with a clear diameter of 6 ft. being necessary, and a 9 in. concrete lining having been adopted, an excavation at least 7.5 ft. in diameter had to be made. The nature of the materials to be passed through was considered to be such that a one-piece casing of constant diameter could not be forced down. Accordingly the casing was made in eight vertical cylindrical sections built of 5-16 inch boiler plate. Each of these sections had a 1½ x 3 inch reinforcing ring at the top and bottom, the top ring being riveted to the outside and the bottom ring to the inside of the casing. The section at the top was 10.5 ft. in diameter, the next one below it, 10 ft. 1 in. and so on, each section differing by 5 in. from the previous section in order that the various sections could be telescoped and the joint between the reinforcing rings calked with oakum. Each section was prevented from sliding down over the one below it by ½ x 3 in. angles bolted to it; these angles also locked the sections together.

The first and second sections were put down without any difficulty, the excavated material being taken out in buckets raised to the surface by a hoisting engine and the water encountered discharged by a steam siphon. The real difficulties were first encountered in sinking the third section when the water began to flow in such quantities that the siphon could no longer handle it, so a 500-gal. duplex pump was installed. This pump was set on a platform swung at the bottom of the excavation on a wire cable suspended over a chain block at the top of the well, enabling the platform to be lowered or raised as desired. The pump could only just handle the water that flowed into the excavation from the coarse gravel encountered in sinking the third section. The sinking of the last few feet of the latter was in clay and was accomplished without difficulty.

In sinking the fourth casing, however, work was nearly stopped when the cutting edge entered a bed of quick-sand. The section was finally forced through the quick-sand with eight jackscrews spaced equally around the rim. After penetrating about 18 in. into the clay below the quick-sand, the power afforded by these jackscrews was found to be inadequate to force the shell down further, so this section was left 1 ft. above its proper place. By this time the water had been nearly shut off by making the excavation slightly smaller than the ring,

the remaining clay forming almost a water-tight joint. During the sinking of this and all the subsequent sections the joints between the latter would occasionally break loose and until they could be calked again large volumes of water carrying sand and clay would pour into the excavation. This calking could only be done with great difficulty as the leak would travel around the casing and force out the oakum in fresh places. The joints could not be made tight enough so they could be poured with lead and no other means could be devised to make them dry enough to permit concrete to be deposited against them, for of course the smallest leak would have washed out the green cement.

The large horizontal pump was found to be unsuited to the work so a vertical outside packed plunger pump with a capacity of 33 gal. a minute was secured. At this time there was a leakage of only 5 or 6 gal. a minute which came through the joints or followed down the outside of the casing and came in at the bottom. Good progress was made for a time under these conditions, when suddenly a stream of water forced its way up through the clay in the bottom and the large pump was placed in service again. The last clay was removed 10 to 12 ft. below this break, leaving a bed of sand carrying a heavy flow of water. After considerable difficulty with the pump the casing was forced down by working the jacks and excavating the sand simultaneously. After sinking the section 7 to 8 ft. in this manner the pressure on the outside of the casing caused the water to gush forth and pile 3 or 4 ft. of sand up in the bottom of the excavation. By carefully removing this sand and at the same time forcing down the casing a foot or more could be gained before another rush of sand and water would temporarily suspend the work, making progress slow.

The leaks which occasionally developed at the joints had meanwhile carried so much sand and clay into the excavation that the surface of the ground had cracked and settled over an area of 40 ft. in diameter around the mouth of the well. This sinking finally became so marked that the decision was made not to go any lower, for although the last section had not been put down, an extra 7 ft. of depth was gained by the settling of the ground at the surface. Before preparations could be made to build the concrete lining, however, a heavy flow of water broke through between the fourth and fifth sections and the subsequent movement of the soil around the casing squeezed the latter to an egg-shape. Fearing the entire casing might collapse the well was allowed to fill in order to balance the pressure on both sides of the casing. As this occurred late in the Fall, operations were suspended until Spring.

A steam-driven deep-well pump, with a Cook well point was set up when work was started in the Spring, and proved very satisfactory in keeping down the water. When the latter had been removed it was found that about 20 ft. of material had filled in at the bottom of the excavation. As soon as this was removed the sand again began to come in, but the bottom was readily sealed with two layers of sacks of concrete. The water was then permitted to rise in order to relieve the pressure on the concrete while it was setting. When this concrete was hard, the water was drawn down again and 30 in. of concrete laid over that in the sacks. A rectangular opening was left in this floor for the well point of the suction of the deep well-pump. This opening was covered with steel plates placed around the well point and a 12 in. concrete floor laid over the whole bottom. A 5 in. threaded pipe fitted with a flange was also placed through the floor to prevent the water pressure coming on the latter if the pump failed. This

5 in. pipe was provided with a blank flange tapped for a 1 in. and a 2 in. pipe which was used later in filling the opening around the well point.

The concrete lining was placed in forms built of 2 x 4 in. lagging spiked to circular ribs. These forms were made in sections 10 ft. long, the length of each section of the casing, and were built in six segments. New ribs were required for each section owing to the changes in the diameter of the excavation, but the lagging was used repeatedly. The forms were made above ground and the segments lowered into the well, where those of a section could be bolted together and beveled ready for the concrete in 2 to 3 hours.

The angle braces on the casing which were not already sheared off when the water was drawn down in the Spring were removed. The joints between the sections were then calked with fresh oakum, and dried white pine tongue and groove wedges were driven into them with sledges. In spite of these precautions the joints continued to leak so they were covered with strips of tin, leaving a hollow at the joint through which the water was conducted to a pipe leading through the forms.

The concrete mixture consisted of 1 part Portland cement, containing 1½ per cent. by weight of Medusa Waterproofing, 2 parts of coarse river sand and 4 parts crushed limestone, which would pass through a 1 inch screen and be held on a ¼ inch screen. *Tests of various waterproofing substances,* such as a mixture of alum and soft soap and hydrated lime, were made before the work was commenced, with the result that the *Medusa Waterproofing* was adopted. Test blocks of concrete containing 1 per cent. of this compound mixed with cement showed no penetration over 1-16 in. in depth after being soaked for 48 hours in hot water, while plain concrete mixed in the same manner was found to be saturated under the same conditions.

No night work was done in placing the concrete, but the damp air in the well prevented the latter from attaining much of a permanent set over night, and the surface of the finished work was carefully washed with neat cement each morning. The water was allowed to rise in the well as the concrete was brought up and after the work was finished was allowed to stand for six weeks so the concrete would be sufficiently hardened to resist the pressure head that would be brought against it. When the water was pumped out the various pipes that had been left in the concrete to handle the water from the joints in the casing were filled. The compartment containing the point of the pump was finally filled through the 2 in. pipe in the flange on the 5 in. pipe left in the floor. *A certain amount of seepage was expected through the lining, but after remaining damp for several months the concrete became as dry as concrete above ground.*

The 2 to 3 in. cracks in the surface of the ground around the mouth of the well were washed full of sand and then a square several feet larger than the footing for the building was excavated to a depth of 14 ft., the upper 6 ft. in sunken ground and the remainder in solid earth. The bottom of the excavation was then covered with sand on which the footing walls and piers for the tower were built, the remainder of the excavation being filled to the ground level again with earth. Elevations determined on the footing walls showed a slight settlement when the full load of the superstructure was first placed on them, but this has now ceased and the tower has not been strained in any way.

The foregoing information was supplied by Mr. W. E. Wagner, who assumed charge of the work during the sinking of the fourth section of the casing.

Extract from Engineering Record, February 16, 1907.

Eight years after completion of the above mentioned work we received the following:

East Alton, Ill., Sept. 26, 1914.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

Gentlemen:

Your favor of September 24th is at hand, and we note you desire some information regarding the condition of the shot tower well, which we put in using your material for waterproofing purposes.

The work is in the same condition as when it was finished and has not given us any trouble whatever since the completion.

We do not see but that the result is practically as perfect as it is possible as there is no water passing through the concrete walls which are submerged for a depth of something like forty feet.

You are at liberty to use this information in any way you see fit as we have given you the facts as they stand at the present time.

Yours truly,

EQUITABLE POWDER MFG. CO.,
F. W. Olin, President.

Y. M. C. A. Swimming Pool, Wheeling, West Virginia
Waterproofed with Medusa Waterproofing.

United States Government Structures
Eastern District

Fire Control Observing Station

Signal Corps Switchboard Room

Power Plant for Search-Lights

United States Government Structures

Eastern District

Search-Light Shelter

With the adoption of Medusa Waterproofing by the United States Government in coast defenses, this material has an enviable reputation, and architects and contractors should have no hesitancy in specifying and using it where satisfactory and permanent results are essential.

The following is a testimonial received from Morris E. Payne, architect and civil engineer, who used Medusa Waterproofing very successfully.

New London, Conn., Oct. 6, 1914.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

Gentlemen:

I am very glad to testify as to the quality of Medusa Waterproofing. I have had occasion to use quite a lot of your material and have found it to be equal to its manufacturer's guarantee.

While in the employ of the Government I used large quantities in connection with the erection of a great many artillery fire-control structures. Most of these buildings were constructed of expanded metal on light steel frames, the expanded metal being plastered with cement, waterproofed with Medusa Waterproofing, on both sides. The buildings are concealed by earthwork to some extent, but at the same time are subjected to severe storms. I do not know of a single instance where any trouble was encountered after using your product.

Very truly yours,

MORRIS E. PAYNE,
Architect and Civil Engineer.

Battle Commander's Station

From a paper by Robt. F. Havlik, M. E., read at the Eighth Annual Convention of the National Association of Cement Users.

Waterproofing

In speaking of waterproofing, I tread on dangerous ground. Regardless of what can be said of monolithic concrete, I am of the firm belief that concrete building products such as block and trim should all be waterproof, so they will absorb little or no water. It has been contended frequently that they can be made waterproof without the use of a waterproofing. I have had considerable experience along this line, but have failed to make a waterproof block without the use of a waterproofing, regardless of how wet I made the facing. I contend that concrete building products should dry in a few hours after a severe rain, and no product made without a waterproofing will do this.

I know that block can be made waterproof, without waterproofing, to such an extent that moisture would not affect the interior of the building, but that is not sufficient, for such blocks retain moisture in the face entirely too long. I personally would not live in a house made of concrete block which retained moisture in the face for two days or more after a severe rain. It is this very feature that creates the general impression that concrete products are not waterproof, and for that reason alone, if for no other, a reliable waterproofing should be used to prevent it.

The great majority of waterproofings now on the market are unreliable, but there are a few that are very good. Much of the adverse criticism of waterproofings is due to laboratory tests made on small specimens, perhaps 2″ cubes. Such tests are unreliable, as I know from personal experience. I believe that with any waterproofing a sufficient amount of water must be used to show a little moisture on the surface of the product when made, or else it will not be waterproof. Another precaution that must be taken is to tamp the concrete very thoroughly. It is impossible to do this in small laboratory specimens, and that is why they seldom prove favorable to the waterproofing.

Woolworth Building, New York City

The world-wide reputation that the Woolworth Building, New York City, has already attained is sufficient proof of its structural greatness. Rising 789 feet from the side walk level, 55 stories, it is the highest building in the world. The first three stories are of Bedford limestone, and from the third story to the roof it is entirely of Atlantic terra cotta.

To guard against the discoloration of the joints, which is caused from the smoke and dust, and the danger of the face of this beautiful structure becoming streaked and disfigured, the architect thought best to use Medusa Waterproofed White Portland Cement for backing and setting lime-stone and terra cotta, thereby making not only a non-staining cement mortar but also an impervious one, that would prove capable of withstanding the driving storms that frequently batter the sides of all tall buildings.

After three years Medusa Waterproofed White Portland Cement mortar has met every expectation of the architect in the preservation of the limestone and terra cotta, and no discoloration has shown in the joints.

This building will remain a monument to the architect, Cass Gilbert, a great credit to the builders, Thompson-Starrett Co., and is a valued addition of beauty to a wonderful city.

Note—Over 5000 barrels of Medusa Waterproofed White Portland Cement were used in this work.

Canadian Inspection and Testing Laboratories, Limited.

Montreal, Quebec, Canada, December, 1913.

Stinson-Reeb Builders' Supply Co., Ltd.,
Montreal, P. Q.

Dear Sirs:

Following your instructions we have made the following tests with:

A.—Medusa Waterproofing compound from the Manitoba Gypsum Company.
B.—Medusa Waterproofing compound from the Sandusky Portland Cement Company.
C.—Medusa Waterproofing compound manufactured by yourselves.

SOUNDNESS AND SETTING

These tests were made according to the specifications of the Canadian Society of Civil Engineers using 1 per cent. and 2 per cent. each of the above named compounds and neat cement without compounds for comparison. All these tests were satisfactory, showing no falling off in soundness and setting.

TENSILE TESTS

Made according to Canadian Society of Civil Engineers specifications using 1½ per cent. each of the several compounds with neat cement. The results as tabulated below show no appreciable effect of the strength of the cement.

TENSILE TEST AT 7 DAYS

Briquettes 1 cement to 3 of standard sand with 1½ per cent. waterproofing.

Without Waterproofing	A	B	C
245	250	240	235
248	241	234	239
256	239	255	258
Average	Average	Average	Average
249	243	243	244
	AT 28 DAYS		
375	355	350	361
348	367	372	354
360	362	354	360
Average	Average	Average	Average
361	361	359	358

ABSORPTION AND PERCOLATION

Tests were made with Permeability Testing Apparatus as supplied by the Humboldt Company under city water pressure of an average of 45 pounds per square inch, using briquettes 3 inches in diameter and 2 inches high. Tests were made on briquettes of 1 of cement to 3 of standard sand containing 1 per cent. and 2 per cent. each of each of the waterproofing compounds. These briquettes after maturing some for 7 days and some for 28 days were subjected to water under pressure as stated above of 45 pounds per square inch, and briquettes were weighed before and after tests. No water percolated through the briquettes and when broken the briquettes did not show any penetration of the water, the increase in weight of the briquettes being practically nil, showing that the briquettes had not absorbed any water and that the waterproofing effect of the compounds was very effective.

Concrete blocks with an aggregate of 1 cement, 2 sand and 4 crushed stone of ¾ inches size with an addition of 1 per cent. and 2 per cent. of the Medusa Waterproofing compound manufactured by the Stinson-Reeb Builders' Supply Company, Limited, were made and subjected to a water pressure of 45 pounds per square inch for 24 hours. This test was made on blocks which had matured for 28 days. These blocks did not show any increase in weight after this test. Upon being crushed they broke at an average pressure of 2164 pounds per square inch superficial area and showed no sign of the water penetrating the concrete, the waterproofing being thoroughly effective.

In conclusion we are pleased to state that the addition to concrete of the above named waterproofing compounds has nó deleterious effect, and the waterproofing of the concrete, if the compound is thoroughly mixed with the cement, is very complete.

Very truly yours,
CANADIAN INSPECTION & TESTING LABS., LTD.,
By Dr. G. Herlitchkaey, Director of Cement Laboratories.

City Park Municipal Bathing Pool, Toledo, Ohio

The swimming pool in City Park, Toledo, Ohio, is 180 feet by 60, and from one to four feet deep, containing two basins, and is surrounded by a walk 12 feet wide. Similar bathing pools are located in Navarre and Riverside parks.

These pools were designed by F. E. Wirebaugh, Engineer for The Board of Park Commissioners, and Schillinger Bros. Company, Toledo, were the contractors. Medusa Waterproofing was used in walls and floors. The pools were completed three years ago and are in excellent condition and no leaks have developed,—more conclusive evidence of the wonderful waterproofing qualities of Medusa Waterproofing, which is being used extensively in other public work in Toledo.

Convincing Proof of Permanency of Medusa Waterproofing
After 10 Years, Results Unchanged.

Ironton, Ohio, August 18, 1905.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

Gentlemen:—We used your Medusa Waterproofing to waterproof a 100,000 gallon concrete tank and found it to be entirely satisfactory, at least the tank has not leaked a drop since we used it in the plaster, which we plastered the tank with.

Very truly yours,
THE IRONTON PORTLAND CEMENT CO.

Ironton, Ohio, Oct. 14, 1914.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

Gentlemen:—Referring to your favor of the 12th inst., in regard to Medusa Waterproofing used by us in concrete tank several years ago, will say that we have had this tank in service now about 10 years and up to date we have never noticed any leaks whatever. We have been very well satisfied with the result obtained from the use of your Medusa Waterproofing.

Very truly yours,
THE IRONTON PORTLAND CEMENT CO.
By A. C. Steece, Treas. & Gen. Mgr.

Pope-Whittemore Building and Addition, Cleveland, Ohio.

This building which is occupied by Halle Bros. is of concrete construction, and was designed by Henry Bacon, of New York City.

In its construction a treacherous stratum of water sand was encountered in the sub-basement excavation 28 feet below sidewalk level, which necessitated the employment of a system of interlocking sheathing to hold the earth banks. This did not prevent the percolation of water, and springs appeared through which the water boiled and flooded the enclosure. A system of drains was installed,

diverting the water to sumps and a pump was kept in constant operation. At one foundation wall, as concrete was about to be poured, another spring appeared and it required tons of dry cement, oakum, lamp wicking, etc., to retard and divert the flow until the foundation was properly placed and had attained its set.

Water tightness was finally accomplished through the expert workmanship of the contractors, who incorporated 2 per cent. of Medusa Waterproofing to the weight of cement in all sub-basement foundation walls, concrete base and cement topping of basement floors. A 1-2-4 mix was used for all aggregate concrete, and a 1 to 2 mix for floor topping which required an admixture of Medusa Waterproofing totaling 18,000 pounds.

The work was completed over a year ago, and the Tidewater Building Company, New York City, the contractors, are greatly pleased with the satisfactory results obtained with Medusa Waterproofing.

Concrete Burial Vaults

Medusa Waterproofing is being used in almost every conceivable way, only recently this product having been adopted by the Norwalk Mold Company, Norwalk, Ohio, manufacturers of the Reliable Grave Vault Mold, and their customers, to make burial vaults manufactured by them impervious to water and dampness.

These vaults are being made extensively in the eastern and central states and are a big improvement over the steel vault which is apt to corrode, while the former is of cement and improves with age.

Pittsburgh, Pa., Sept. 9, 1914.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

Gentlemen:

In reply to your recent inquiry with regard to our experience with Medusa Waterproofing.

As you are well aware, we have been purchasing this material in carload quantities for some time and have furnished it to some of the largest and most important buildings that have been constructed in this city, and we can state that up to the present time we have never received a single complaint caused by unsatisfactory material.

When we sell Medusa Waterproofing we furnish the customer insurance without any charge for premium.

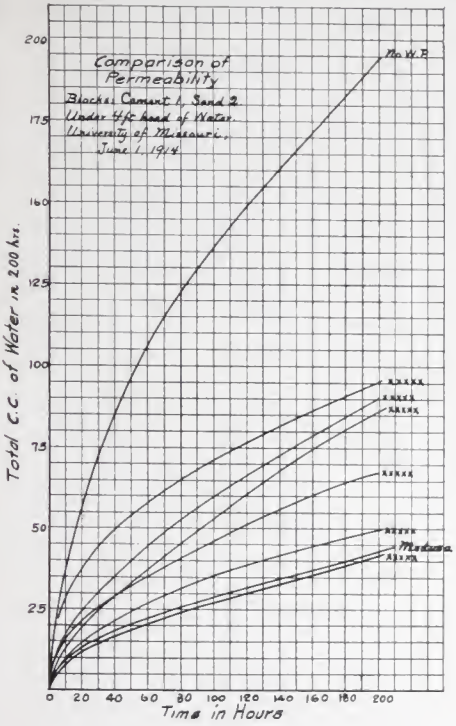
Yours very truly,

HOUSTON BROTHERS COMPANY,
J. W. Windsor, Secretary.

Some Work Done With Medusa Waterproofing

U. S. Government Work, Fort Monroe, Va.
Pennsylvania Tunnel Work, Mt. Union, Pa.
J. Ogden Armour's Residence, Lake Forest, Ill.
Armour & Co., in all work requiring waterproofing.
National Bank, Havana, Cuba, basement and foundations.
Albert Kahn, Architect, Detroit, Mich., private residence.
Conservatory, Lincoln Park, Chicago, Ill.
Larkins Soap Co., Buffalo, N. Y., to waterproof concrete floors.
Chicago Junction Ry. Track Elevation, Chicago, Ill.
A. T. & Santa Fe Ry. Bridge and Building Department.
Standard Oil Co., concrete block buildings.
Electric and Water Co., Yuma, Arizona.
N. Y. C. & H. R. R., Poughkeepsie, N. Y.
Rapid Transit Ry. Tunnel, New York to Brooklyn.
Malabar Hill Reservoir and Filtration Plant, Bombay, India.
Exterior plaster of the Coliseum, Niagara Falls, N. Y., to prevent discoloration and efflorescence caused by the spray from the Falls.
The Baur Bro. Bakery, Pittsburg, Pa., waterproofed throughout.
American Car & Foundry Company's plant, St. Louis, Mo.
Pendelton Investment Co., St. Louis, Mo., using it in all concrete residences erected by them.
Olympic Club Bldg., San Francisco, swimming pool foundations and cellar entirely waterproofed.
Standard Steel Car Co., Hammond, Ind., cement floors, machinery foundations and elevator pits.
Joseph Brandenstein Bldg., San Francisco, concrete floor and retaining wall, also M. J. Brandenstein Bldg., Mission and Spear streets.
Mechanics Bank Bldg., San Francisco, concrete retaining wall, subject to water pressure.
New German Hospital, San Francisco, in concrete plunge tank.
West Bank Bldg., San Francisco.
D. L. & W. Ry., Scranton, Pa., dam work.
Linoleum Plant, Lancaster, Pa., Jas. Stewart & Co., Contractors.
Pacific Bldg., San Francisco, all foundations.
C. C. C. & St. L. Ry. Co., at Mt. Carmel, Ill.
Taylor Ice Plant, and Lynn Haven Hotel, Norfolk, Va.
Union Stock Yards Transit Co., for filter plant.
Copper Queen Mining Co., Dawson, N. M., in coal washing plant.
Seattle Steel Co., oil storage tank.
U. S. Government, Puget Sound navy yard.
Title Trust Co., Seattle, for waterproofing bank vaults.
Oil City, Penn., Water Works Reservoir.
State Capitol Building, Little Rock, Ark.
Hon. Wm. J. Bryan's Residence, Miami, Florida.

Permeability Tests



Of Blocks of Cement 1, Sand 2, under 4 ft. head of water. Tests made in the Chemical Laboratory of the University of Missouri, by G. H. Ziegenbein and S. Reich, under the direction of Professor James A. Gibson, in 1914. Seven brands of waterproofing were tested, approximately 2 parts for each 100 parts cement being used. One block, without any waterproofing, was also tested. The accompanying table shows the volume of water passing in the second 200 hours. In the first 200 hours the best waterproofing allowed 19 c. c. to pass, while the block without waterproofing passed 1564 c. c. Names of all brands except Medusa are omitted in the table.

Medusa Waterproofing Unexcelled for Silos

This illustration is of silo at country house of J. S. Cullinan, Pasadena, Texas, which was waterproofed with Medusa Waterproofing.

A damp-proof silo is without doubt a valuable asset to a farm and Medusa Waterproofing is unexcelled for this class of work.

Campbell's Island Inn, Mississippi River, Near Davenport, Iowa

Campbell's Island is situated in the Mississippi River just above Moline, Illinois, and Bettendorf, Iowa, and is owned by the Tri-City Railway Company. It is operated by them as an amusement and camping park, and an inn or recreation building has been erected thereon, which is a beautiful building, 71 feet by 133, two stories, of frame construction covered with Medusa Waterproofed White Portland Cement, and resting on concrete foundations and footings.

The first story contains public and private dining rooms which open on broad screened porches that are also used for restaurant purposes. The second floor consists of a large ball room, smoking room, and ladies parlor.

Campbell's Island Inn occupies a conspicuous position, with fine bathing beach in front, and can be seen from boats and launches passing on the Mississippi River. It was designed by Temple & Burrows, architects of Davenport, Iowa, and the general contractor was Walter Aram of Moline, Illinois. E. F. Schilling, plasterer, applied the exterior, including white rough cast.

Worcester, Mass., March 19, 1912.

The Smith-Green Co.,
Worcester, Mass.

Gentlemen:—A short time ago, I installed a small pumping plant for the Telegram Newspaper Co. of this city. This was necessitated by the fact that the waterproofing used in the construction of their plant was not wholly able to withstand the water pressure from without, and considerable water consequently appeared in the basement at times.

One part of my work consisted in building a small concrete tank near the spot where most of the trouble occurred and several feet below the lowest spot in the basement; thus probably placing this new work under a greater pressure than the original waterproofing.

I used your Medusa Waterproofing in the concrete for this tank and the results exceeded the expectations of both the newspaper officials and myself. The work is absolutely watertight and eminently satisfactory.

Yours very truly,

ROBERT C. ALLEN, Contractor.

Bostwick-Braun Hardware Company Building, Toledo, Ohio
Perfectly dry 7 years after using Medusa Waterproofing in the basement walls and floors, 20 feet below river level
A. Bentley & Sons, Contractors Geo. S. Mills, Architect

Toledo, Ohio, Oct. 9, 1907.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

Gentlemen:

We did use quite a little Medusa Waterproofing in a large tank which we built at Cincinnati. This tank was 40 ft. wide, 10 ft. deep and 170 ft. long. The bottom and walls were 6 in. thick. We put this in very carefully, running the entire tank in at one continuous operation. This compelled some night work, but we succeeded in getting it all in at one time. As yet we have not had an opportunity of filling the tank with water. The ground outside of it, however, is thoroughly saturated with water and the water stands almost to the top of the tank. Up to date the tank *has not leaked a drop*; in a great many places it is so dry that you can strike a match on it. This we consider is very good.

On the Bostwick-Braun job the Waterproofing was not used on the big river wall, as this is only for dock purposes. This wall, however, is 300 ft. long and 30 ft. deep, and extends about 20 feet below the water line. We are now using the compound on the interior walls and the cellar walls.

Yours truly,

A. BENTLEY & SONS.

Note.—After seven years we received the following in regard to this work:

Toledo, Ohio, Sept. 29, 1914.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

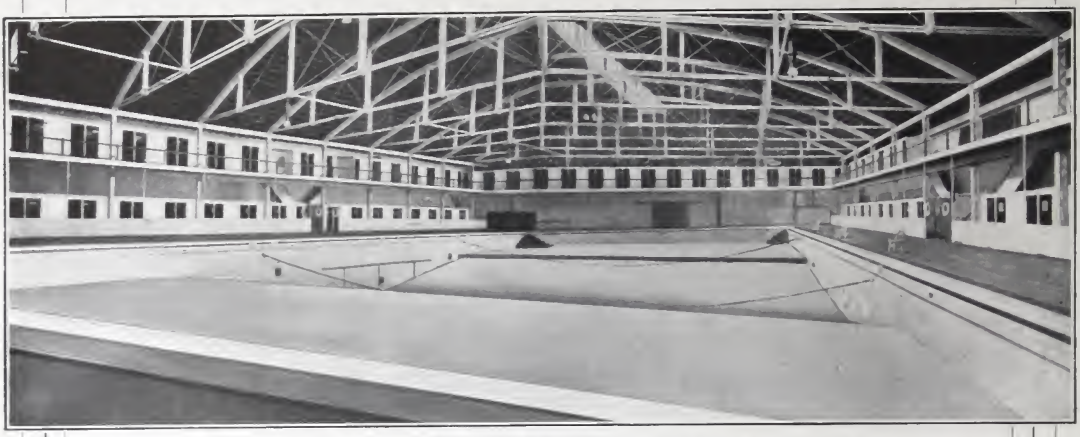
Gentlemen:

Yours of the 28th inst., inquiring in regard to Medusa Waterproofing, carefully noted. The fact that we have had no trouble, we should think, would be the best recommendation that we could suggest. Our basement is perfectly dry, and in the best of condition.

Yours very truly,

THE BOSTWICK-BRAUN CO.,

H. L. Thompson, Pres.



Crystal Natatorium, St. Louis, Mo., Size 100 Ft. x 185 Ft. Largest in United States Waterproofed With Medusa Waterproofing.

St. Louis, Mo., Nov. 8, 1908.

Glencoe Lime & Cement Co.,
St. Louis, Mo.

Gentlemen:

In all my experience with large swimming tanks in this country and Europe, I have not seen one that did not leak somewhere and I hesitated before writing this, waiting to see if our tank, after it had been emptied for some time, might not disclose a defect somewhere. I now unhesitatingly state that your Medusa Waterproofing used in the construction of our tank walls and bottom is indeed a remarkable compound, the more when it is considered that our tank is the largest swimming pool anywhere—containing nearly one million gallons of water—and that, with tremendous pressure asserting itself, not a single leak has been found, so far. As I stated before, it is remarkable, for, when building tank, I anticipated, from my past experience, a great deal of trouble from leaks. Of course, I am doubly pleased with the results.

Yours respectfully,
ST. LOUIS AUDITORIUM CO.,
John C. Meyers, Gen. Mgr.

NOTE:—We were advised on October 1, 1914, that Medusa Waterproofing had proved entirely satisfactory in this swimming pool, and that it is in excellent condition.

Wheeling, W. Va., Oct. 5, 1914.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

Gentlemen:

I have your letter of the 2nd inst., relative to National Bank of W. Va., and beg to advise that your Medusa Waterproofing was used in basement walls and floors for making them impervious to water, as the building is in the flood district and will probably be subjected to flood pressure at least once a year. I have every reason to believe that it will be satisfactory, as I employed the same method and used Medusa Waterproofing in the basement of an eight story reinforced concrete warehouse for W. A. Wilson & Sons in this city, which has successfully withstood floods for three years, and in the basement of the twelve story Windsor Hotel, this city.

Very truly yours,
CHARLES W. BATES,
Architect and Structural Engr.

Spillway of Island Woolen Company, Baraboo, Wisconsin

Medusa Waterproofed Cement was used in power house and spillway of Island Woolen Co., and local workmen who did not know that waterproof walls were possible, were skeptical as to the outcome, but since they have found that the work has been made absolutely impervious to water, they cannot speak too highly of Medusa Waterproofing. About four weeks after completion, this company had occasion to cut into a portion of the flume walls and learned to their surprise that they were more dense and harder than walls made of ordinary cement.

Ossining, New York, Sept. 22, 1914.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

Gentlemen:—After trying at different times several brands of cement waterproofing, both in powder and liquid form, we are prepared to state that for satisfactory and lasting results, we have found nothing equal to Medusa.

We have used your Waterproofing exclusively for the last five years, and expect to use it in all future work.

Very truly yours,
OSSINING PRESSED STONE CO.,
George C. Holden, Manager.

Chicago, Ill., October 1, 1914.

Sandusky Portland Cement Co.,
Sandusky, Ohio.

Gentlemen:—I am quoting below testimony of our Mr. A. C. Heidelberg, Supt. of Factory, regarding experience he has had with Medusa Waterproofing:

"We have been users of Medusa Waterproofing and Medusa Waterproofed Cement for several years and have obtained the best of results. We use Medusa Waterproofing in our waterproofed concrete and plaster our work with Medusa Waterproofed Cement. Results have been entirely satisfactory."

Yours very truly,
POTTER-WINSLOW CO.,
O. A. Geneser, Secretary.

Market Place, Ft. Wayne, Indiana

The Fort Wayne, Ind., market house is constructed entirely of concrete except roof, is 450 feet long and 26 feet 8 inches wide. The walls of the pavilions were built upon a core of brick work, presenting an unbroken surface of concrete made of white sand and Medusa White Portland Cement, with an aggregate of birdseye or roofing gravel. The roof consists of a framework of wood covered with red roofing tile. A concrete floor is provided for the entire structure.

Medusa Waterproofing was used in all of the concrete to the extent of about 1½ or 2 per cent. of the amount of cement used. Mahurin & Mahurin were the architects, and Borkenstein & Son, the contractors.

Oil City, Pennsylvania, Water Works Reservoir
Waterproofed throughout with Medusa Waterproofing
G. F. Roess, City Engineer, in charge.

Medusa Waterproofing Used Extensively in England

Medusa Waterproofing has been used by the Admiralty, War Office, Horseguard's Office of Works, Indian Office, Woolwich Arsenal, Record Office for Bank of England, New Zealand and Queensland Governments, King's House at Jamaica, Royal Naval College, Greenwich, H. M. Dockyard, Portsmouth, General Post Office, London, and by hundreds of architects, engineers, general contractors, builders and decorators throughout all of England and its possessions.

(FAC-SIMILE OF ORDER)

ORDER No. 11290

G. & T. Earle (1912) Limited, Cement Manufacturers

Wilmington, Hull, England, Sept. 14, 1914

To Messrs. Sandusky Portland Cement Co.,
Sandusky, Ohio, U. S. A.

Please supply the undermentioned goods and charge to our account.

36000 pounds Medusa Waterproofing as before.

G. & T. EARLE (1912) Ltd.

Glasgow, England, Feb. 14, 1914.

G. & T. Earle, Ltd.,
Wilmington, Hull, England.

Dear Sirs:

We have pleasure in stating that we have used Medusa Waterproofing mixed with Portland cement for plastering the outer surfaces of brick walls 4½" thick. The inner face of the brick work was plastered and no studding or lathing were used and the experiment has proved a great success, no complaint of dampness having been made.

The building where this treatment of the outer walls was adopted consisted of large blocks having ground and upper floor, also kitchen block, latrines, etc., at Maryhill barracks, Glasgow. We have used Medusa Waterproofing on several other smaller jobs and it has always given satisfaction.

Very truly yours,
GEORGE ROME & CO., LTD.

Mausoleum, Decatur, Illinois

Eight years ago F. J. Walters built the mausoleum illustrated here, which is 40 feet by 110 feet, 24 feet high, and contains 350 crypts, one receiving vault and chapel.

Cement blocks thoroughly waterproofed with Medusa Waterproofing and faced with Medusa White Portland Cement were used. The roof is of reinforced steel and tile imbedded in cement, while the interior is lined throughout with marble.

Those who have seen the work recently state that it looks better than when built, is elegant in appearance and shows remarkable durability, and is indeed a great testimonial to Medusa products.

Worcester, Mass., March 19, 1912.

The Smith-Green Company,
Worcester, Mass.

Gentlemen:

The Medusa Waterproofing which we have used where necessary to obtain absolutely waterproof cement concrete, has proved, on all occasions, equal to the requirement. We have used it in bulk concrete as well as in cement plastering, and it has given unquestionable good service in both cases.

It is quicker and cheaper than the old method of pitch and felt sealing for foundation work, and for pools, wash-stands, reservoirs and tanks its use is absolutely safe and more economical.

Of course, to get the best results, reasonable care in mixing the Waterproofing with Portland cement is essential.

Yours very truly,
THE GEORGE W. CARR COMPANY.
Engineers and Contractors.
By H. C. Wilson.

Tests

Concrete Blocks, Water Absorption
effect of
Medusa Waterproofing

Hollow blocks 8x9x16 inches, of Medusa Cement 125, Sand and Gravel 600, equal 1 to 4&4-5, by weight, with and without Medusa Waterproofing. Exposed to weather 9 months; then allowed to become air-dry in factory; placed in water 2 in. deep, and weighed at 1, 2, 3, 4 and 24 hours.

Amount of Waterproofing Per Cent. of Weight of Cement	Water Absorbed, Per Cent. of Total Weight					
	Weight dry. lbs.	1 hr.	2 hrs.	3 hrs.	4 hrs.	24 hrs.
No. 1—Waterproofing 0%	60.62	4.38	4.84	4.94	4.99	5.46
No. 2—Waterproofing 1%	62.34	.44	.44	.48	.54	.70
No. 3—Waterproofing 2%	62.06	.09	.09	.14	.14	.30

It must be understood that the above test is much more severe than the heaviest rain storm.

The life of the cement block industry depends upon concrete houses being waterproof.

Portion of
Selby Hill Tunnel,
built by
The Twin City Rapid Transit
Co., Minneapolis.

Medusa Waterproofing
used in this work.

Geo. L. Wilson, Chief Engineer
Geo. J. Grant, Contractor
Chas. R. Shepley,
Resident Engineer

New Union Station, Washington, D. C.
One of the most beautiful concrete buildings in the world. Medusa Waterproofing used in cement tile for roof
Thompson-Starret Company, General Engineers and Contractors
J. C. McFarland & Company, Sub-Contractors for Cement Tile Waterproof Roof

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Austin, Texas, October 26, 1914

W. L. Macatee & Sons,
Houston, Texas.

Dear Sirs:—I take pleasure in stating that Medusa Waterproofing was used in the City National Bank, Temple, Texas, and was used in the basement walls, which are all concrete. This basement was blasted out of rock some 7 or 8 feet and you might say a drain of the whole town; we had some very heavy rains while working there, and pumped considerable water but mostly from the outside of the walls. I noticed on several occasions that there were some three and four feet of water on the outside of the walls, and the inside of the walls were bone dry.

I don't know what this is composed of, but will say that I have never seen anything to equal it in waterproofing.

Yours very truly,
J. O. POLHEMUS.

This illustrates Y. M. C. A. building, of Eau Claire, Wis., in which Medusa Waterproofing was used for making concrete basement walls and floors impervious to water. Medusa Waterproofing was also used in Y. M. C. A. buildings in Erie, Pa., Moline, Ill., and Wheeling, W. Va.

A Reinforced Concrete Low-Head Water Tank and Its Waterproofing

[*By H. F. Bloomquist in the Minnesota Engineer*]

The city of New Ulm, Minn., completed a reinforced concrete reservoir of 1,000,000 gallons capacity, a cylindrical structure 75 feet in diameter with the walls 30 feet high, and covered with a conical concrete roof. Since it was of the utmost importance that the walls and floor should be water-tight, special care was taken during the construction to grade the aggregate for the concrete. It has been found by experiments that the densest concrete can be made when rounded pebbles varying in size from about ¼ inch to about 2½ inches are used instead of broken stone on account of the ease with which such pebbles will move about in a quaking mixture while it is being worked in place, and adjust their positions so as to form the least amount of voids. For this reason pebbles were screened from a gravel bank and used instead of crushed stone for the walls and upper part of the floor, and the sand used was a mixture of very coarse and ordinary fine sand. To reduce the permeability of the concrete to a minimum, 20 pounds of hydrated lime was used in every barrel of cement, and after the forms were removed the walls were brushed and cleaned with steel brushes, and two coats of cement plastering were applied on the inside. The mortar for the plastering consisted of one part cement, two parts of sand, hydrated lime to the extent of 10 per cent. and *Medusa Waterproofing* to the extent of 3 per cent. of the cement used. The proportion used for the concrete in the walls and the upper 4 inches of the floor was 1:2:4 and this proportion of concrete together with the plastering has apparently made the walls water-tight, as no leakage has been noticed up to this time except a small leak in the bottom shortly after the reservoir was filled, which was due to an imperfect bond at one point between old and new concrete. This, however, did not cause serious trouble.

Medusa Waterproofing for the Farm

Medusa Waterproofing has been used extensively on the farm for waterproofing concrete barn floors, root and milk cellars, poultry houses, concrete stalls, feeeding and watering troughs, tanks, cisterns, etc. The illustration herewith is that of a watering trough waterproofed with Medusa Waterproofing by L. W. Combs, in charge of J. S. Cullinan's country house, Pasadena, Texas.

President's House, Sandusky Portland Cement Company, Bay Bridge, Ohio

Only 1 per cent. of Medusa Waterproofing was used in cement for blocks in this residence,—4 pounds to each barrel of cement. Plastering was done directly on the blocks without furring or lathing, and the house is perfectly dry.

This should be an encouraging example for concrete block manufacturers, as there are many washes and so-called waterproof substances on the market which do not give satisfaction. By using Medusa Waterproofing, a "tried and true" product, you can give your customers a positive damp-proof guarantee, enabling them to eliminate expense of experimenting with other materials.

Extract From Report of Tests of Commissioners of Sewerage, Louisville, Ky.

Duration of tests, 7 hrs.
Pressure, 15 lbs. per sq. inch.

	Cubic Inches per square inch	Gallons per square foot	Total Seepage Cu. Cm.
Concrete 1-2-4	6.30	13.85	3000
Concrete with			
Medusa Waterproofing, 2 per cent.	0.92	2.01	450
Medusa Waterproofing, 4 per cent.	0.00	0.00	0